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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Ferdinand GROGL, et al.

Appln. No.: 09/915,528

Confirmation No.: 7040

Filed: July 27, 2001

For: CABLE WITH AT LEAST ONE TRANSMISSION ELEMENT

Docket No: Q63846

Group Art Unit: 2831

Examiner: Chau M. NGUYEN

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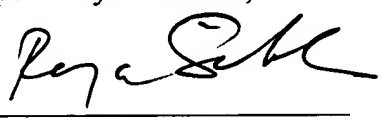
SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. A check for the statutory fee of $330.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



Raja Saliba
Registration No. 43,078

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellants submit the following:

I. REAL PARTY IN INTEREST

The real party in interest is the Assignee, NEXANS. An Assignment was filed in U.S. Application No. 09/915,528 on October 18, 2001 and recorded at Reel 012154, Frame 0243.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representatives, and the assignee in this application are not aware of any other appeals or interferences which directly affect or be directly affected by or having a bearing on the Board's decision in the pending appeal.

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III. STATUS OF CLAIMS

Claims 1-9 are all the claims involved in this appeal and are set forth in the attached Appendix.

Claims 1-3, 8 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wargotz et al. (US 3,852,518) ("Wargotz")in view of McGregor et al. (US 6,403,890) ("McGregor").

Claims 4-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wargotz in view of McGregor as applied to claim 1 above, and further in view of Livingston et al. (US 5,426,264) ("Livingston").

IV. STATUS OF AMENDMENTS

Appellants filed an Amendment under 37 C.F.R. § 1.111 on June 13, 2002, in response to the Office Action (paper no. 6) mailed March 13, 2002, wherein claim 1 was amended and claims 8 and 9 were added. Appellants filed a Response , without amending any claims, under 37 C.F.R. § 1.116 on October 31, 2002, to the Final Office Action (paper no. 8) mailed on July 31, 2002. In the Advisory Action (paper no. 10) mailed November 8, 2002, the Examiner maintained the rejection of claims 1-9.

Appellants filed an Amendment with a Request for Continued Examination (RCE) on December 31, 2002, wherein claims 1 and 9 were amended. Appellants filed a Response, without amending any claims, under 37 C.F.R. § 1.111 on May 27, 2003, to the Office Action (paper no. 15) mailed on February 27, 2003. Appellants filed a Response, without amending any claims, under 37 C.F.R. § 1.116 on July 24, 2002, to the Final Office Action (paper no. 17)

mailed on June 23, 2003. In the Advisory Action (paper no. 19) mailed August 25, 2003, the Examiner maintained the rejection of claims 1-9.

Appellants filed a Notice of Appeal on September 23, 2003, to appeal from the Final Office Action (paper no. 17) rejecting claims 1-9.

V. SUMMARY OF THE INVENTION

This invention relates to a cable that is surrounded by a sheath of insulating material (Specification at page 1, lines 5-6). The object of the invention is to provide a cable that is simple to construct and where the insulation can be readily stripped without risk of injury to the conductor (Specification at page 2, lines 6-8). One embodiment of the present invention which is recited in claim 1 includes a sheath that comprises an inner layer and an outer layer which are firmly bonded together (Specification at page 2, lines 9-10).

The tensile strength and elongation at break of the inner layer are designed to be clearly lower than those of the outer layer (Specification at page 2, lines 11-12). Due to this special feature of the inner layer, the sheath may be readily removed from the conductor without risking injury to the conductor because only the outer layer needs to be completely severed (Specification at page 2, lines 16-19). Thus, making the cable particularly suitable for semiautomatic or fully automatic prefabrication (Specification at page 2, lines 20-21).

VI. ISSUES

Whether claims 1-3, 8 and 9 are unpatentable under 35 U.S.C. § 103(a) in view of Wargotz and McGregor.

Whether claims 4-7 are unpatentable under 35 U.S.C. § 103(a) in view of Wargotz and McGregor as applied to claim 1 and further in view of Livingston.

VII. GROUPING OF CLAIMS

For the purposes of this appeal only, the grouping of the claims is as follows:

Group 1: Claims 1, 2, 3, 8 and 9.

Group 2: Claims 4, 5, 6, and 7.

VIII. ARGUMENTS

A primary feature of each of the independent claims 1 and 9 is the requirement for the tensile strength and elongation at break of the inner layer of the cable sheathing to be ***significantly lower*** than the outer layer of the sheathing. This arrangement allows for easy removal of the insulating sheath without risking injury to the conductor because only the outer layer needs to be completely severed (Specification at page 2, lines 16-19). Wargotz whether considered alone or together with McGregor does not teach or suggest this feature either explicitly or implicitly.

Given the extensive prosecution of this application, Appellant believes that it would be helpful to review the history of the opposing positions taken by the Examiner and the Appellants. A discussion of these positions follows:

In the Office Action dated February 27, 2002, the Examiner rejected the independent claims in view of Wargotz and McGregor. The Examiner relies on Wargotz as a primary reference for its disclosure of a two layer sheath. The Examiner acknowledges that "Wargotz, et al. does not specifically disclose the values for tensile strength and elongation at break of the

inner layer are significantly lower than those of the outer layer (re claims 1 and 9)." Office Action dated February 27, 2003 page 3. Accordingly, the grounds of rejection rely on McGregor to allege that this reference, in combination with Wargotz makes up for the deficiency in claims 1 and 9.

In the Office Action dated February 27, 2002, the Examiner alleges that:

> McGregor, et al. discloses a cable comprising a sheath consisting of an inner layer and an outer layer, wherein additives are mixed into the inner layer (col. 7, lines 37-38) to resist insulation degradation. It would have been obvious to one skilled in the art to mix additives as taught by McGregor, et al. in the inner layer of Wargotz, et al. to resist insulation degradation. Noted that since the inner layer includes additives, the values for tensile strength and elongation at break of the inner layer are significantly lower than those of the outer layer (re claims 1, 8 and 9).

Office Action dated February 27, 2002.

Appellants responded on May 27 2002 to this rejection, arguing that the Examiner did not establish a prima facie case of obviousness as set forth by the Manual Of Patent Examining Procedure ("MPEP") which states:

> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

MPEP at Section 2143. Appellants submit that at least the first and third criteria have not been met by the Examiner.

With respect to the third criteria, Appellants submit that, even if, assuming for the sake of argument alone, one skilled in the art were to have combined the applied references as alleged, the resulting combination would not have taught or suggested a cable in which the values for tensile strength and elongation at break of the inner layer are significantly lower than those of the outer layer.

Specifically, Wargotz and McGregor only show cables with a two layer sheath of insulation material. The references are completely silent on the relative tensile strength and elongation at break of the inner and outer layers.

Wargotz discloses (see abstract) an underground power and service entrance cable with a sheath of a two layer polyethylene insulation. The two layers are fused together and cross-linked. The insulation is mechanically stronger, thermoset throughout its full thickness, and has a superior stability in water. The issue of easily removing the insulation from the conductor is not touched upon by this reference. There is no hint in the direction of the invention.

McGregor discloses a magnet wire insulation that can withstand voltage wave shapes present in inverter driven motors (see abstract). This kind of insulation is needed in this special field of use, because a degradation of the wire insulation is caused by high voltage and higher frequency wave shapes (see column 1, lines 30 to 36). To avoid this drawback, a mixture of silica and chromium oxide is dispersed in at least one of two layers of the insulation which surrounds the electrical conductor (see claim 1). Again, however, the reference makes no hint in the direction of the invention. The assertion made in the grounds of rejection that "since the

inner layer includes additives, the values for tensile strength and elongation at break of the inner layer are **[necessarily]** significantly lower than those of the outer layer," is mere supposition and finds no technical basis. That is, the disclosure of the presence of additives in a layer does not teach or suggest anything about that layer's tensile strength or elongation at break relative to the other layers. One skilled in the art would need to know the desired final characteristics (i.e., the claimed features) in order to make the insulation as claimed.

The Examiner cannot leap to the conclusion regarding the allegedly disclosed values for tensile strength and elongation at break of the inner layer in McGregor without setting forth a technical foundation supporting the supposition that including additives **necessarily** results in these features. Appellants submit that this foundation cannot be made, because the alleged relationship is not true.

Therefore, the combination of Wargotz and McGregor could only lead to a cable (wire) with a two layer insulation that is completely different from the insulation according to the invention.

With respect to the first criteria noted above for establishing a prima facie case of obviousness, Appellants submit that there is clearly no motivation to combine Wargotz and McGregor in the manner alleged to obtain the presently claimed invention, even if the structure of the insulation in McGregor has the features regarding the relative tensile strength and elongation at break.

The Federal Circuit has reminded us that the USPTO is held to a rigorous standard when trying to show that an invention would have been obvious in view of the combination of two or more references. See, In re Lee, USPQ2d 1430, 1433 (Fed. Cir. 2002), citing, e.g., In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.").

The Federal Circuit goes on to emphasize that the "need for specificity pervades this authority." In re Lee at 1433 (citing In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed").

Appellants respectfully submit that the current grounds of rejection do not satisfy the Federal Circuit's rigorous standard for demonstrating that the claimed invention would have been obvious in view of the combination of Wargotz and McGregor.

Specifically, Wargotz describes (see abstract) an underground power and service entrance cable. McGregor on the other hand describes magnet wire insulation that can withstand voltage wave shapes present in inverter driven motors. Therefore, there is no disclosed motivation for modifying the cable of Wargotz to include the mix additives of McGregor, since these additives are disclosed in McGregor as having a very particular application (magnetic wire insulation

designed to withstand voltages present in inverter driven motors) not relevant to the application of the cables of Wargotz (underground power and service entrance cables).

In summary, there simply is no teaching or suggestion in the applied art to use the materials as defined in claims 1 and 9 of the present application, because in each applied reference completely different characteristics are needed to address entirely different problems associated with their respective applications.

In an Office Action dated June 23, 2003, the Examiner responded to the foregoing position by stating:

> Applicant argues that the Office Action has not established a *prima facie* case of obviousness because the three basic criteria to establish a prima facie case have not been presented in the Office Action. This argument is not found persuasive because such criteria are being presented in the Office Action. Specifically, the combination of Wargotz et al. and McGregor et al. teach all the claims limitations (third condition), and it is suggested by McGregor et al. that including additives in the inner layer would provide resistance to degradation of the insulation due to high voltage passing through the conductor (first and second conditions). Accordingly, a *prima facie* case of obviousness has been established.
>
> Applicant also argues that Wargotz et al. and McGregor et al. are both completely silent on the relative tensile strength and elongation at break of the inner and outer layers. Examiner would disagrees [sic]. McGregor et al. teaches additives being added in the inner layer, and it is the fact that additives are mixed into the base material of the inner layer that result in the lower values of tensile strength and elongation at break of the inner layer, as claimed in the claimed invention (claim 8). Accordingly, McGregor et al. is not completely silent about the tensile strength and the elongation at break of the inner and outer layers.

> Applicant then argues that Wargotz et al. is directed to an underground power cable, while McGregor et al. is directed to magnet wire insulation that can withstand voltage from inverter driven motors. In response to this argument, it is found that both Wargotz et al. and McGregor et al. are directed to electrical cables. Therefore, it is appropriate to use the teaching of McGregor et al. to modify the cable of Wargotz et al.

Office Action dated June 23, 2003 at pages 5-6.

Appellants responded on July 24, 2003 to this rejection. Appellants maintain that the claims are allowable for the reasons set forth in the previous response, and furthermore, Appellants submit the following.

The grounds of rejection are entirely incorrect with respect to the disclosure of McGregor. There is no support in this disclosure to find that the additives added to one of the layers of the cable sheath of McGregor would necessarily result the recited relative values of tensile strength and elongation at break for the inner and outer layers. Rather, only when one is aware of the disclosure of Appellant 's invention does would one know how to go about modifying the cable of Wargotz. However, such pure hindsight reconstruction is improper.

Without the knowledge taken from Appellant's disclosure, one skilled in the art could not have concluded from the teachings or suggestions of McGregor to modify the cable structure of Wargotz so as to include Appellant's claimed inner and outer sheaths. McGregor describes a magnet wire insulation that is designed with particular applicability to withstand voltage wave shapes present in inverter driven motors (see abstract). To avoid **degradation of the wire insulation,** McGregor adds a mixture of silica and chromium oxide to **at least one** of the two

polymer layers of the insulation (see claim 1). The reference is entirely silent about tensile strength and elongation at break of the insulation.

Moreover, since the additives can be added with the method of McGregor to "at least one" of the layers, they can be added either to the first layer or to the second layer or to both layers. That is possible because a degradation of the complete wire insulation would be avoided. Therefore, it is impossible for a person skilled in the art to take away from McGregor a two layer insulation with the special characteristics of the invention.

Indeed, even if, for the sake of argument alone, the inclusion of additives to a layer would necessarily reduce the tensile strength and elongation at break of that layer, the additives would have to be added only to the inner layer. That is, these additives could not be added to the outer layer or to both layers of the insulation but they **must be added to only the inner layer.** There is no such disclosure or direction in McGregor for the skilled artisan.

In sum, the teaching of McGregor is completely different from the method of the invention and there is no hint at all to reduce tensile strength and elongation at break of the inner layer of the insulation in comparison with the outer layer.

In view of at least the foregoing differences, independent claims 1 and 9 are patentable over the applied art, as are claims 2-8 at least by reason of their dependency to base claim 1.

Furthermore, claims 4 and 5 recite features that further define the tensile strength of the layers and claims 6 and 7 recite features that further define the elongation at break of the layers.

In rejecting claims 4-7 over Wargotz. in view of McGregor and further in view of Livingston, the Examiner's grounds of rejection allege that:

> Livingston et al. discloses a cable comprising a sheath which comprises an inner layer (28) and an outer layer (30), wherein the values for tensile strength and elongation at break of the inner layer (28) are significantly lower than those of the outer layer (30) (see the C&M document attached herewith, etc. the inner layer being polyethylene and the outer layer being PVDF).
>
> Livingston et al. also discloses the tensile strength of the inner layer being approximately half of that of the outer layer and being about 20 N/mm^2, the elongation of the inner layer being no more than approximately one third of that of the outer layer and being about 150%. It would have been obvious to one skilled in the art to apply the teaching of Livingston et al. in the cable sheath of Wargotz et al. such that the cable is stable at moderately high temperatures.

Office Action dated June 23, 2003 at page 4.

Appellant disagrees.

Livingston discloses (see abstract) an electrical cable for use in submersible well pumps which has an insulating layer of cross-linked polyethylene and an outer barrier layer formed from a fluoropolymer. The outer barrier layer is designed to protect the cross-linked polyethylene layer so that the polyethylene layer remains stable at temperatures above 250 degrees Fahrenheit (Col. 4, lines 17-29). The Examiner contends that when polyethylene is used for the inner layer and PVDF is used for the outer layer, the requirements of claims 4-7 are anticipated.

Claim 4 recites that the tensile strength of the inner layer is approximately half of that of the outer layer. The Examiner contends that it would have been obvious to one skilled in the art to apply the teachings of Livingston to Wargotz such that the cable is stable is moderate at high

temperatures. Livingston discloses the selection of insulating material based on resistance to deterioration based on temperature not tensile strength. As stated above, Wargotz discloses a cable insulated with two layers. The outer layer is high density polyethylene selected for its resistance to mechanical damage when used in direct burial applications. The inner layer is low density polyethylene selected for its electrical stability in water. See Col. 1, lines 25-30. Appellants submit that the teachings of Livingston and Wargotz do not disclose the selection of insulating material based on the tensile strength of the material and McGregor does not cure this deficiency. Therefore, there is no motivation or suggestion for one of ordinary skill in the art to combine the teaching above to produce the invention in claim 4.

Furthermore, any combination of insulating materials in Livingston and Wargotz that may produce the combination claimed would be totally fortuitous. In the C&M paper referred to by the Examiner, the tensile strength of Polyethylene is in the range of 1500-2200 (see C&M page 10) and the tensile strength of PVDF is in the range of 5200-7500 (see C&M page 11). Applicants submit that these ranges are so broad that a skilled artisan would require specific knowledge of the tensile strengths of these materials in order to produce the claimed combination. Therefore, selections based on resistance to temperature (Livingston) or mechanical damage (Wargotz) will not produce the claimed combination. Appellants further submit the Examiner has failed to show the "particular findings [that] must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these

components for combination in the manner claimed." In re Lee at 1433 (citing In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)).

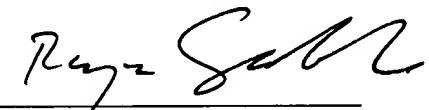
Therefore, Appellants submit that claim 4 is patentable for at least the reasons stated above. Because claim 5 is dependent on claim 4, Appellants submit that claim 5 is patentable by virtue of its dependency.

Claim 6 recites the feature that the elongation at break of the inner layer is no more than approximately one third of the elongation at break of the outer layer. For reasons similar to the above for claim 4, Appellants submit that claim 6 is patentable. Appellants submit that claim 7 is patentable by virtue of its dependency on claim 6.

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Raja Saliba
Registration No. 43,078

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860
WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: December 23, 2003

APPENDIX

CLAIMS 1-9 ON APPEAL:

1. A cable with at least one transmission element, which is surrounded by a sheath of insulation material, wherein the sheath (M) consists of only an inner layer (3) and an outer layer (4), which are made of materials being firmly bonded together when the outer layer (4) is extruded around the inner layer (3) and wherein the values for tensile strength and elongation at break of inner layer (3) are significantly lower than those of the outer layer (4).

2. A cable as claimed in claim 1, wherein the two layers (3, 4) of the sheath (M) are of approximately the same thickness.

3. A cable as claimed in claim 1, wherein the thickness ratio of the outer layer (4) to the inner layer (3) is between 60:40 and 40:60.

4. A cable as claimed in claim 1, wherein the tensile strength of the inner layer (3) is approximately half of that of the outer layer (4).

5. A cable as claimed in claim 4, wherein the tensile strength of the inner layer (3) is about 20 N/mm^2.

6. A cable as claimed in claim 1, wherein the elongation at break of the inner layer (3) is no more than approximately one third of the elongation at break of the outer layer (4).

7. A cable as claimed in claim 6, wherein the elongation at break of the inner layer (3) is about 150%.

8. The cable according to claim 1, wherein both the inner layer and the outer layer are made of the same base material and the inner layer includes additives mixed into the base material that result in the lower values of the inner layer.

9. A cable with at least one transmission element, which is surrounded by a sheath of insulation material, wherein the sheath consists of only an inner layer and an outer layer, wherein the inner layer without a separate adhesive therebetween, and wherein the values for tensile strength and elongation at break of the inner layer are significantly lower than those of the outer layer.